

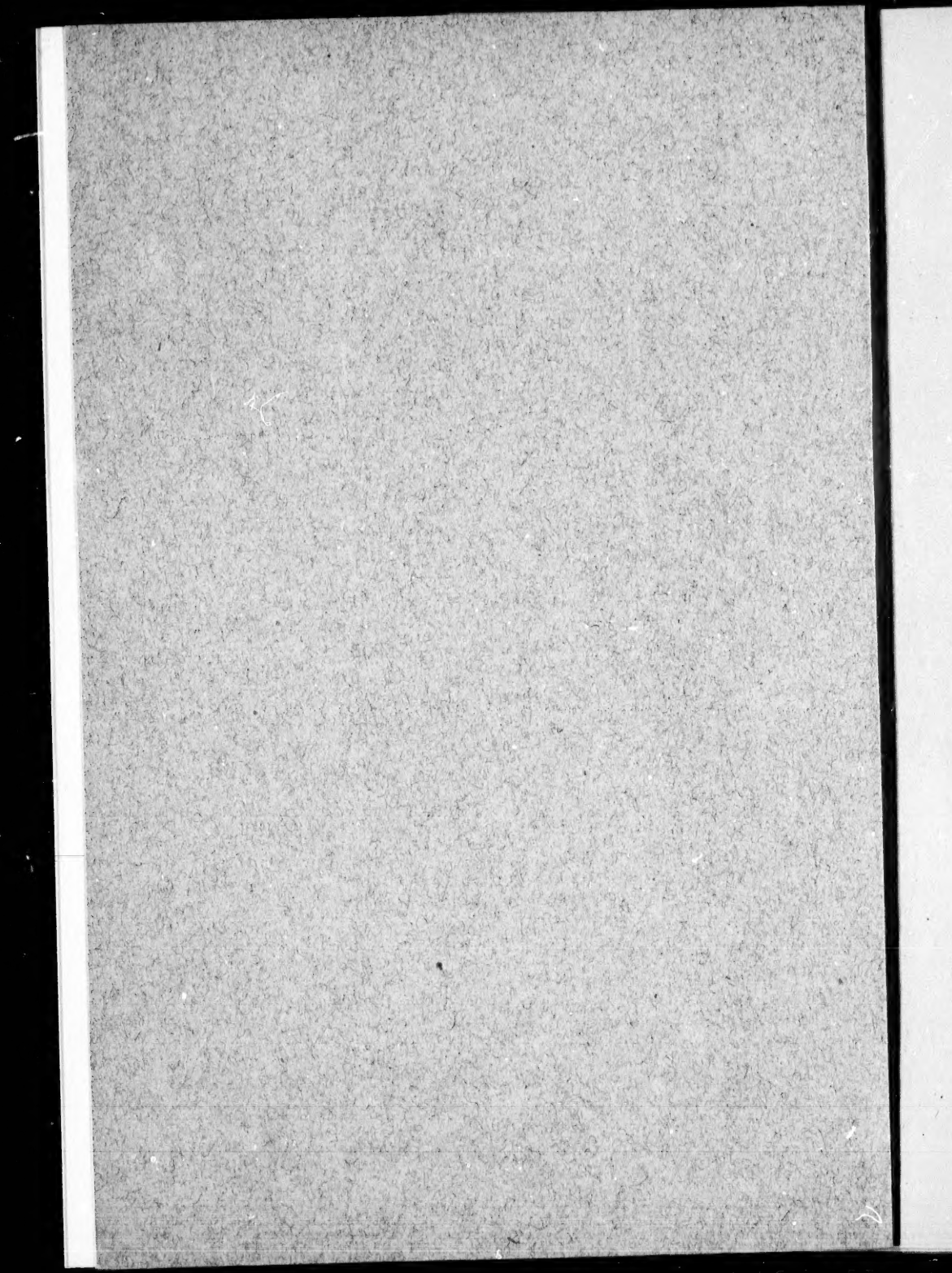
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THE
CLIMATE OF SOUTHERN ALBERTA
AND ITS
RELATION TO HEALTH AND DISEASE.

BY G. A. KENNEDY, M.D., FORT McLEOD, ALBERTA.

(Paper read before the Canadian Medical Association, at Banff, N.W.T., August, 1889.)

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It appears to me that no apology is necessary in introducing the subject of this paper. It is only a few years since the opening of our great national highway brought the North-West Territories into touch with the rest of the world. And only a few years further back since these vast plains and mountains which are now so quickly becoming the home of civilized man were regarded as an inhospitable desert, fit only for the buffalo which roamed their solitudes and the Indians subsisting on the chase. The past five years have been epoch-making, so far as our great west is concerned. Coincident with and following on the building of the Canadian Pacific, a flood of light began to illumine the eastern intelligence, and, as a consequence, settlement has steadily and in a gradually increasing stream poured into the territories, and cities, towns and villages, surrounded by cultivated farms, now occupy the places once sacred to the Indian tepee or the half-breed camp.

As a matter of course, this progress has been marked by a corresponding increase of knowledge with regard to our climate. We are no longer supposed merely to exist Esquimaux-like for the greater part of the year. It is conceded that our winters are bearable, even, in some enlightened minds, that they may

possess a charm of their own, but beyond this, serene and unbounded ignorance is the rule. Furthermore, so far as I have been able to ascertain, no observations have yet been published as to the effects of the climate of the North-West on the human system. It is in my mind a subject of almost national importance, and I have an earnest hope that my temerity in venturing to introduce it in this discussion will inspire others better fitted than I to follow it up.

It will be readily understood that a country almost equal in area to Russia must have many diversities of climate. As I cannot undertake to speak for the whole of the North-West, I have limited my remarks to that part with which I am best acquainted—viz., that strip of country lying along the eastern base of the mountains, and more particularly the southern part of this, bounded, say, on the north, by the Canadian Pacific Railway. I make the eastern limit a line drawn north and south through Lethbridge, although, for all practical purposes, this line can be extended as far east as Medicine Hat; on the south is the international boundary line, and to the west the summit line of the Rockies and British Columbia. This Southern Alberta comprises an area of 150 miles square of mountain, foothill and prairie. It is intersected every few miles by mountain streams, where clear and sparkling waters rippling over their gravelly beds are as yet unpolluted by the filth and garbage of more thickly settled communities. Its general character is treeless, save along the valleys of these streams, which are fringed by the willow and cottonwood, and on the sides and bases of the mountains, whose rocky framework is clothed by the grateful ~~germ~~ *growth* of the spruce and fir.

To the outside world, this is known as Canada's grazing country, whence England will draw a large part of its future beef supply. As a sort of corollary to this, it has also been known, in a general way, that it was reputed to have a milder climate than the rest of the North-West Territories. To most of you, the following description will be not only interesting but necessary to a proper understanding of what follows. It is taken from an admirable paper by Mr. C. C. McCaul of Leth-

bridge, published in the August number of the *American Meteorological Review*. After noticing that winter really sets in about the middle of December, he goes on to say—

“It is characterized by a maximum of bright, still, cloudless days, a scanty snow-fall, and frequent and prolonged breaks of warm weather, heralded by the chinook wind, of which more hereafter. Occasionally a bad snow-storm will cover the prairie to a depth of eighteen or twenty inches; this, however, is very exceptional. The winter generally breaks up in February by a grand blow from the west, followed by a period of from one to three weeks of warm, bright weather, which may fairly be called the beginning of spring.

“Spring, here as elsewhere, is the most variable and capricious season of the year. On the whole, it may, perhaps, be described as cold and damp, with frequent rain-falls, varied by bursts of the most gloriously bright, warm weather, lasting sometimes a fortnight or three weeks.

“May is generally fine, warm and bright; June and the earlier part of July, rainy; the remainder of July, August, September, October and November, warm and very dry.

“The summer, July to September, is characterized by hot days and cool nights, with very little rain, but the warm, hazy days of autumn often lasting well into December, are the glory of the year.

“The grand characteristic of the climate as a whole, that on which all weather hinges, is the chinook wind. It blows from west to south-west, in varying degrees of strength, from the gentle breeze, that just lowers the heads of the daisies, to the howling gale, that carries off contributions of chimneys, barrels, shingles, hats and miscellaneous rubbish to our neighbors in Assiniboia. In winter the wind is distinctly warm; in summer, not so distinctly cool. Its approach is heralded by the massing of dark, cumulus clouds above the mountain tops, and a distant wailing and rumbling from the passes and gorges. Its effect in winter is little short of miraculous. When the real chinook blows, the thermometer often rises in a few hours from 20° below to 40° above zero; the snow, which in the morning may

have been a foot deep, disappears, and before night everything is dripping. But before another night falls, all the water is lapped up by the thirsty wind, and the prairie is so dry that a horse's hoof hardly makes an impression, as you take your first welcome canter, after a prolonged and tedious spell of 'settin' round the stove.' "

It may be added to this that the elevation above sea level of the plains here varies from 2,700 feet at Lethbridge to 4,500 feet at the entrance to the Crow's Nest Pass, which may be taken as the base of the mountains proper.

Now, as to practical details, I might say that winter and early spring are characterized by the coughs and colds incident to their seasons in almost any country. Summer is very healthy, and in autumn there are occasional cases of malarial fever of a remittent type, of which more hereafter. Rheumatism is remarkably rare, when we consider the sudden changes of temperature that often occur and the fact that most of the male population have led lives of the greatest exposure. When it does occur it is almost always in the subacute and chronic forms. Affections of the lungs are also very infrequent. During eleven years' practice I never had a case of pneumonia until last winter, when four cropped up, two each of croupous and catarrhal. Summer disorders are almost unknown—a fact which must be attributed partly to the sparseness of population, but which is largely due, in my opinion, to the cool nights, which allow exhausted nature to recuperate even after the hottest days. About nervous affections I am hardly in a position to speak, but I judge that the rarified air and the sometimes high winds would not be beneficial. During the past four years I have had three cases of paralysis—hemiplegia—occurring in patients otherwise perfectly healthy, cowboys in the prime and vigor of manhood, who have had no specific disease, who were quite temperate, and whose family history the most careful inquiry found irreproachable. These cases were and are a puzzle to me, and I can imagine no cause but excessive riding. A cowboy's life, as you know, means often ten, twelve and fourteen hours in the saddle, day after day, week after week, and month after month, and it

has seemed to me possible that this might in time produce the above effects.

I have alluded to the existence of an endemic malarial fever occurring principally in the fall. This is general throughout the Territories, and has given rise to much comment and some difference of opinion among medical men. Its character is variously modified by the season, climate, soil and immediate surroundings of the locality in which it is present. It has been called remittent, intermittent, malarial, typho-malarial and typhoid, according as a certain set of symptoms predominated, and is known throughout all the West by laymen as "mountain fever." During the past ten years, and while acting as surgeon in the Mounted Police, I have been stationed in different parts of the Territories, and have had occasion to observe this fever in all its different forms. I have seen it at its lightest, characterized only by a chill and the symptoms of a heavy cold, and broken up at once by free diaphoresis and a dose of quinine. On the other hand, I have attended cases in which all treatment was of no avail, cases badly affected by environment, that would go on from bad to worse until finally they would sink into the typhoid state—too often only the beginning of the end. Between these extremes all grades of severity are met with, their most general characteristic being, however, their atypical character. Routine treatment is therefore impossible, except, perhaps, at the beginning, when I made it a rule to relieve the bowels by a calomel purge, promote free diaphoresis by pulv. ipecac. co. or antipyrin, sometimes a combination of the two, and give two or three large doses of quinine,—subsequent treatment on general principles.

I have alluded to the different names by which this fever has been called and the consequent confusion. The cause of this is, I believe, the tendency to regard it as a distinct typical disease, which it is *not*. The cause may be the same (no one, I believe, has ever questioned its malarial nature), but the variations in the course, symptoms and severity are important enough to entitle them to be called almost distinct types. These variations are due to locality, to the season, to differing conditions of soil, climate, atmospheric moisture, etc., and to the individual. An-

other cause of the confusion has been the occasional occurrence of typhoid fever and the incautious use of the unfortunate term "typho-malarial." I say unfortunate, because I believe that from the time of its coinage in 1861-2 it has never ceased to be a cloak for uncertainty, an unknown quantity in statistics, and an added difficulty to the struggling and inexperienced practitioner. It would be a good thing, in my opinion, if it were expunged from the nomenclature of diseases; for, notwithstanding the care that was exercised in its definition by the U. S. Commission, wherein it was distinctly pointed out that it was "not a specific or distinct type of disease, but a term conveniently applied to the compound forms of fever which result from the combined influences of the causes of the malarious fevers and of typhoid fever," there *has been* a tendency to elevate it into a distinct type of disease. In the North-West, while I have often seen severe cases of malarial-remittent falling into the typhoid state, and cases of typhoid marked at first by malaria, while, I confess, I have been sometimes at a loss at first to classify my case, I can hardly recall an instance in which waiting a few days did not clear up the diagnosis. A case in point is the following:

A man came into Macleod from a ranche twenty miles distant, last fall, suffering from all the symptoms of quotidian intermittent. He had, some years before, lived in a malarious district of Michigan, and been subject to ague. He had been sick for three or four days, the chills, fever and sweating well marked and definite, but there was more depression than is the case in an ordinary intermittent. I treated him for three or four days, and broke up the periodicity. The fever became remittent then, and four days after there appeared the rose-colored spots and other symptoms of typhoid, which ran its course to recovery. I may say in passing, that a case like this illustrates the difficulty in understanding how typhoid fever never occurs *de novo*, but always from the presence of a pre-existent specific germ. The ranche from which this man came is isolated, and had only been established some two or three years. The water supply was from a spring. There had never been a case there before, and the place has been free from it since.

In 1886 I made an attempt to have collected detailed reports of all cases of fevers occurring throughout the North-West, so that the special features of each district might become better known. This attempt was frustrated through ignorance or misapprehension of my motive. It is a matter of regret to me that my suggestions were not adopted, for I am not one of those who believe that we have reached the sum possible of attainable knowledge with regard to malaria. We owe much to the researches of Thommasi, Crudeli and Klebs, Laveran, Osler and Carter, in tracing out the life history in the blood of the malarial plasmodium. But I believe the future has still something to unfold to us of its nature, mode of action outside of, and entrance into the human system. And I believe we have yet much to learn of the relations between the paludal and typhoid poisons. I find it difficult to believe the story of the statistics which tells us that typhoid fever, pure and simple, is three, four and five times more fatal than the same fever complicated with malaria. And I believe that more care in the diagnosis, which is now rendered somewhat easier by the application of Ehrlich's test, more thoroughness in the recording of cases, and more attention to etiology, will help us to clear up these doubtful points which few will question are stumbling-blocks in our path.

I trust that I have not been misunderstood—that while remarking on the fever at greater length, perhaps, than its importance warrants, I have not led you to the belief that it is a constant menace to life and health in South Alberta. I should be sorry to have made this impression, which would be an entirely false one. Some years the country is entirely free from fever, and generally it is mild and readily amenable to treatment. And severe cases will no doubt become rarer when greater care is exercised in personal and domestic sanitation. I believe that I have now said the worst that *can* be said of the climate of Southern Alberta, and I consider that in doing so I have earned the right to dwell briefly on what appears to me its distinguishing characteristic. I allude to its freedom from diseases of the lungs and its value as a resort or place of living for phthisical patients. I have already spoken of the

rarity of pneumonia and other lung affections. I know of two cases of phthisis commencing in the country—one of acute tuberculosis, strongly hereditary, and which proved fatal, and another of fibroid, the cause of which I believe to be the fine dust of the corral acting in the same manner as stone-mason's and knife-grinder's phthisis. This latter steadily improved on ceasing work, and is now nearly well. On the other hand, I have known of a great many cases of incipient consumption that have come to Alberta, and in some the disease has been arrested, and in others the sufferer restored to perfect health. These facts will not appear strange when the conditions are considered, for, according to the latest consensus of opinion among climatologists, the climate treatment of phthisis requires—

1. A dry aseptic atmosphere.
 2. A dry soil.
 3. The greatest possible number of clear, sunshiny days during which the invalid can exercise in the open air.
 4. A certain amount or degree of elevation above sea level.
- Equability of temperature within certain limits is not considered necessary.

I believe I may assert, without danger of contradiction, that Southern Alberta possesses all these requisites in a most eminent degree. The dryness of the atmosphere is insured by the character of the country—great, grassy, undulating, treeless plain, elevated from two to five thousand feet above sea level, and distant some hundreds of miles from any considerable body of water. Accurate meteorological data are wanting, but it is sufficient to say that Alberta is not different from the whole strip of country lying along the eastern base of the continental watershed, and which the absence of a sufficient rainfall has caused to be devoted principally to the raising of stock. This dryness of the air, combined with its elevation, almost necessarily renders it aseptic in a wonderful degree.

Elevation is not now considered by some an essential feature in the climatic treatment of phthisis. The altitude theory, which Miguel did so much to bring into favor, and which was so great an advance in the indiscriminate employment of places like

equality

Madeira and Havana—places where warmth and equality of temperature and a certain degree of moisture were prevailing features—is now slowly going out of fashion. But it is doubtful if even the immense power of fashion—which, it is to be deplored, is almost as great in medicine as in millinery—will ever be able to seriously affect, in the medical mind, the value of elevation. The reason it is not so much considered new is that it was found that the curative properties were the dryness and purity of the air, not necessarily elevation. But it is difficult, almost impossible, to find a dry aseptic atmosphere* without the elevation, or near sea level, and for this reason, if for no other, patients in search of a climate will still throng to the elevated regions. Besides the other physiological effects of elevation, the increased respiratory activity and expansion of the lungs and chest walls, the consequent increased nutrition, the cool nights, almost compelling sound and refreshing sleep, are all factors of no little value in the altitude treatment.

As before mentioned, the elevation in Southern Alberta varies from two to five thousand feet, and the patient can therefore choose the locality which seems to suit best his particular case. Laennec, Bowditch, Buchanan and others having made it very clear that soil moisture is one of the chief causes of phthisis, a dry soil must be considered a necessity for any place putting forward claims to be regarded as a resort or place of living for consumptives.

While I am not able to give the geological formation of South Alberta, I can assert, without fear of contradiction, that its soil must be regarded as pre-eminently a dry one. While water is easily obtainable in and near the mountains, and in certain places elsewhere throughout the greater part of the district, and particularly from where the foothills merge into the plains, it is difficult to get it near the surface, and it is not unusual to hear of wells having to be bored to the depth of one, two and three hundred feet.

Perhaps a more important point than any of the foregoing—certainly a most necessary one—is the number of days during which patients can take exercise in the open air.

* Excepting Aiken, Ga.

Heavily.

Here the want of meteorological observations is again ~~surely~~ felt, but from a private record kept during the five years, ending December, 1888, I am able to state the following.

The number of days which are recorded as overcast, raining and storming, is respectively, 51, 49, 56, 53, and 44, being an average of a fraction over fifty, all the rest being noted as fine. Over fifty per cent. of these (fifty) are simply overcast, so it is fairly presumable that in the large majority, confinement to the house would be unnecessary.

These observations were taken, moreover, very close to the mountains, where local storms are more prevalent than on the plains.

As to the class of cases for which Southern Alberta is suitable, I am content to take Dr. Knight's selection, which is, I believe, approved by the great balance of authority on the subject. It comprises :

I. Those presenting the earliest physical signs of tuberculosis of the apex, who have as yet shown little if any general disturbance from the disease, and who complain only of morning cough and expectoration.

As Dr. Knight very truly remarks, the prognosis in this class has been changed from very bad to very good by the improved ideas of treatment.

II. Hemorrhagic cases without marked febrile reaction or much physical evidence of disease.

III. Certain cases of fibroid or interstitial pneumonia.

IV. Patients recovering from acute pleurisy or pneumonia in whom the eruption of the tubercle is dreaded.

For these classes of cases Southern Alberta offers inducements hardly excelled by any place on the continent. I trust I have already satisfied you that the necessary climatic conditions are present, the dry aseptic atmosphere, the dry soil, the clear sunshiny days, and the necessary elevation. I have not dwelt on other points, but I should exceed the limits of an article of this kind, but there are one or two which I feel compelled to mention. One is that seekers after health are not obliged to remain for a few months, at the approach of winter or summer,

Only and then go away

~~only, and then go away again.~~ They can live here with equal benefit all the year round. Another is that, being a stock-raising country, it is easily possible to spend almost all one's time in the saddle. It was Sydenham who said that "unlimited horseback exercise is almost as good a cure for phthisis as quinine for ague." Another is that Alberta is in Canada, so why should Canadian physicians send their patients to Colorado, when they have a climate equally as good within the confines of their own Dominion?

The general conditions of life are those of any new and growing country. Many of the pleasures of the east have to be dispensed with. Our embryo cities do not yet possess the theatres, opera houses and pleasure resorts of their more pretentious eastern sisters. But to most people the bright sunny skies, the pure, bracing, intoxicating air, the exhilarating freedom of outdoor life, and the unrivalled scenery of Alberta will amply compensate for the artificial pleasures they are obliged to forego.

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